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17. ABSTRACT (MAX. 250 WORDS)

Presents graphs to show proportion of students who completed successive lessons in correspondence study courses. Possible uses of data are discussed.

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PROPORTION OF STUDENTS COMPLETING SUCCESSIVE ASSIGNMENTS IN CORRESPONDENCE STUDY COURSES

An Exploratory Study made by George P. Hollenbeck
under the Direction of Prof. Charles Bridgman
(1958)

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We have prepared, for each course, a graph showing the number of students completing successive assignments in the course, starting with those who enrolled over a period of time in the past. The starting periods were chosen far enough in the past so that substantially no students could be considered as still active, i.e., they all would either have terminated or have completed the course.

Courses differ in number of assignments and number of enrollments. In order to facilitate comparison among courses, the graphs have been plotted on a percentage basis (i.e., percent of original group completing each successive assignment plotted against percent of the total course assignments). In addition, the "percent completing" scale has been made proportional (logarithmic) rather than linear, so that equal steps at various parts of the scale represent equal proportions of the remaining group. On such a scale the points will fall on a sloping straight line if a constant proportion of the remaining group of students drops out at each successive lesson.

The first graph shows the results for the U.W. 4-credit course, Psychology 1, Introduction to Psychology. A total of 260 students enrolled in this 32-assignment course during the period studied. Only about 85% of the group submitted the first assignment, a 15% loss. However, subsequent losses from assignment to assignment were nearly constant for the first third of the course, when expressed as a proportion of the remaining group, as can be seen by noting that a straight line, sloping downward at approximately a 45 degree angle, will fit the points reasonably well up to about 35% completion. This slope corresponds to a proportional loss on each assignment such that approximately 10% of the group drops out for each tenth of the course.

The sloping lines in the square in the upper right-hand corner provide a gauge for interpreting various slopes in terms of percent of drop-outs per one-tenth of the course. The remainder of the curve can be approximated, although only roughly, by a straight line with a three or 4% slope. Perhaps a better description would be to say that between 35 and 60% completion, i.e., from the eleventh through the twentieth assignment, the drop-out rate was about 5 or 6% (for each tenth of the course) with little loss thereafter.

The net result is completion by approximately 47% of the initial group, or by about 55% of those who submitted the first assignment.

We can try to apply probability concepts to a description of the behavior recorded in such a curve. For example, if all the members of the group were subject to equal probability of dropping out on each lesson, and this probability remained constant throughout the course, a fixed proportion of the remaining group would be lost on each succeeding lesson, and we would observe a straight line of constant slope. If we assume that the group is made up of two sub-groups, one of quite high drop-out probability on each lesson, and the other of much lower drop-out probability, the initial branch of the curve would be steeper, and the final branch would be flatter, with its slope representing principally the drop-out rate of the more persistent group (on the assumption that nearly all of the high probability group would have dropped).

A more attractive hypothesis may be that the probability of terminating decreases for the group as a whole as each successive lesson is completed. In these circumstances the curve would start with a steeper slope and gradually level off.

We are not in a position to explore in more quantitative detail the results to be expected from these and other possible hypotheses, but it may be of some interest to keep this formulation of the problem in mind when examining the results.

The second graph is for the first semester high school course in psychology (Psychology 10). It should be noted that the percent completing scale (ordinate or y-axis) is expanded in this graph as compared to that for Psychology 1. As a result, the slope corresponding to a given drop-out rate is steeper, as can be seen by examining the calibration slopes in the square. After the initial loss of 9% between registration and completion of the first lesson, the curve shows about a 3% loss (for each successive tenth of the course) through the eighth lesson. All of those who completed the ninth lesson completed the entire course (12 assignments). The resultant completion rate is 78% of registrants, or about 85% of those who completed the first assignment.

Although the curve from the first to the ninth assignments is roughly a straight line, some of the deviations may be meaningful, rather than chance variation. For example, no drop-outs occurred between the second and third, fourth and fifth, and seventh and eighth assignments. The possible significance of this apparent completion "by pairs" might be further explored. The relatively large drop between the sixth and seventh assignments may be related to the fact that a mid-course trial examination was presented at this point in the course, and the students then started on the second section of the course, which was separately bound. The relatively high completion rate may be related to the small number of assignments, and to the fact that the subject matter does not require relatively difficult rote learning components, nor particularly specialized

concepts and operations (as in mathematics), but instead deals with material fairly closely related to the everyday life and language of the student (although a considerable number of new terms must be learned).

The next two graphs represent experience with the USAFI Introductory Psychology course. The procedure for obtaining these data was cross-sectional, in that a count was made of the number of completions of each assignment in the course over a one-year period. This is a large enrollment course, with fairly steady enrollment, and we should obtain essentially the same information as given by the longitudinal procedure.

Graph 3 presents data for 1956-57 and Graph 4 for 1957-58. The two curves are similar, indicating some reliability of the method and consistency of this aspect of performance over a two-year period.

The drop-out rates are higher for this course, and it has again been necessary to modify the percent completing scale so that it covers the range from 100 down to 10%. Consequently, the slopes on these graphs are not directly comparable to those on either of the first two graphs.

We do not have data on number registering for this course, so the first point represents the number completing assignment 1, and is plotted as 100%. The loss rate for the first five lessons is something over 25% per tenth of the course. From the fifth through the twelfth assignments the rate is reduced to approximately 8%. From the thirteenth lesson to the end of the course there is little loss, and the final over-all result is just under 1% completing.

The higher drop-out rate for USAFI courses is a familiar phenomenon [illegible] can be understood in terms of the USAFI situation. There is evidence on these graphs that losses of students are reduced after completion of

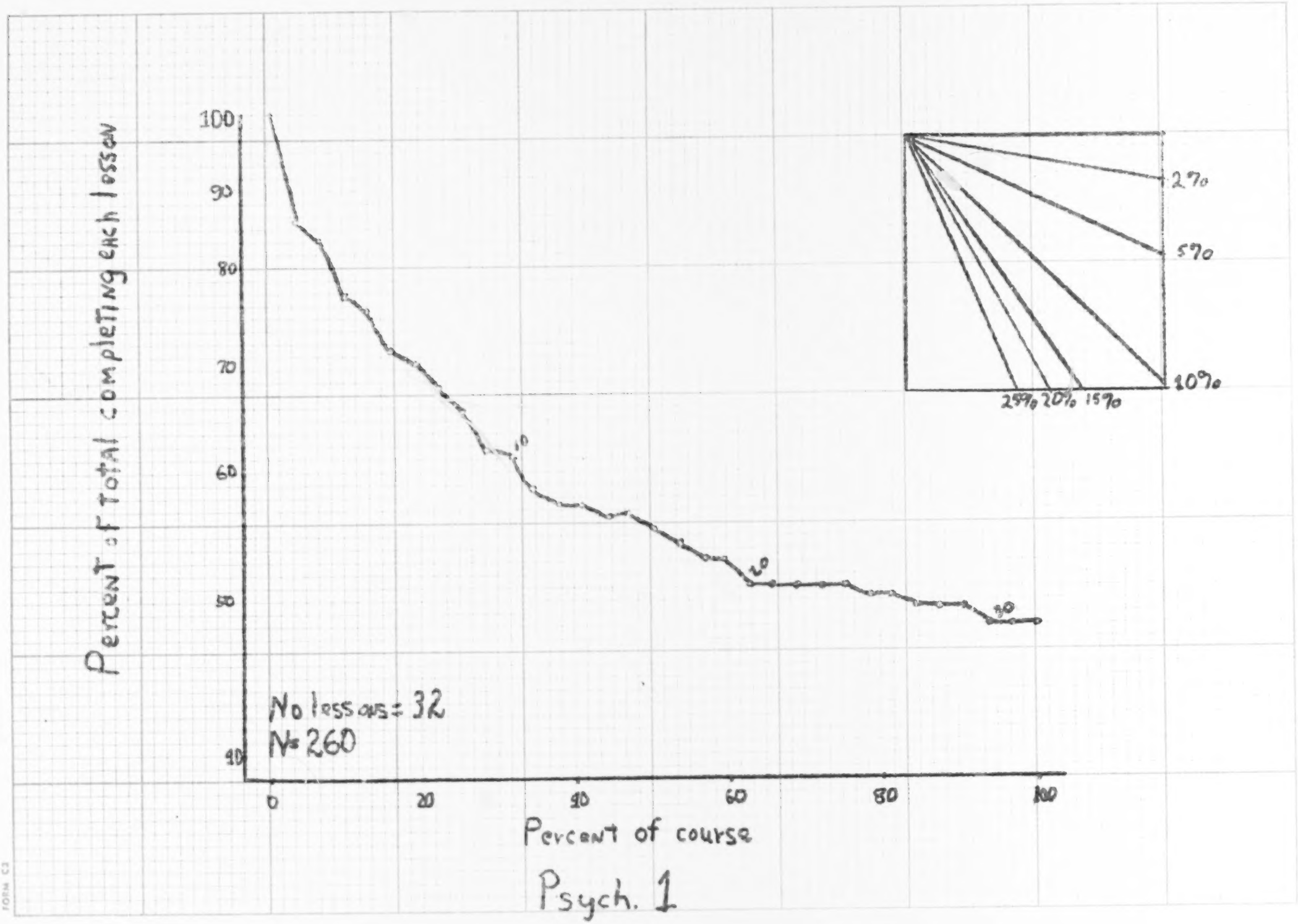
or the fifth lesson may be some kind of hurdle, completion of which increases the probability of sticking with the task. This latter view permits the speculation that "nursing" the students along for the first few lessons might decrease subsequent drop-outs.

It is interesting to note that the change in slope occurred at or near the tenth lesson for the 32-assignment Psychology 1 course, which represents the same degree of completion as the fifth assignment in the USAFI 16-assignment course. Whether this is more than coincidence remains to be determined.

The remaining graphs represent data for various mathematics courses (U.W. and high school), for a USAFI course in American Government, and for the Political Science Visa course. Individuals familiar with these courses might find it profitable to attempt simple analyses of the results similar to those given above. One thing which can be noted is the much improved completion rate for the second of two math courses in a sequence. Presumably many if not all of those taking the second of a pair of courses have already completed the first of the pair.

The curve for Mathematics 50 departs considerably from the picture for the other courses, in that there is very little deceleration of loss toward the end of the course.

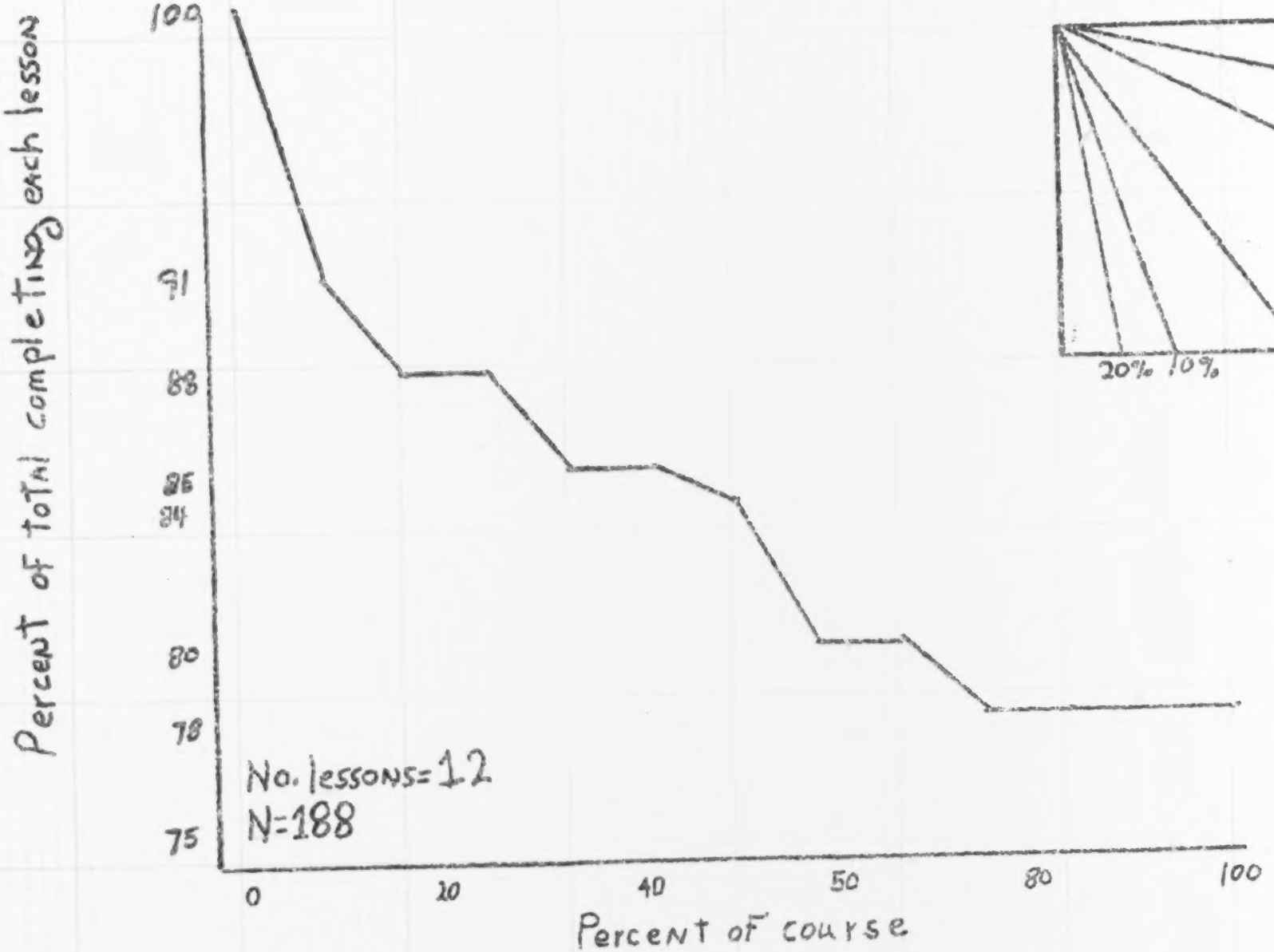
Consideration should be given to the possible value of extending this procedure to other courses.

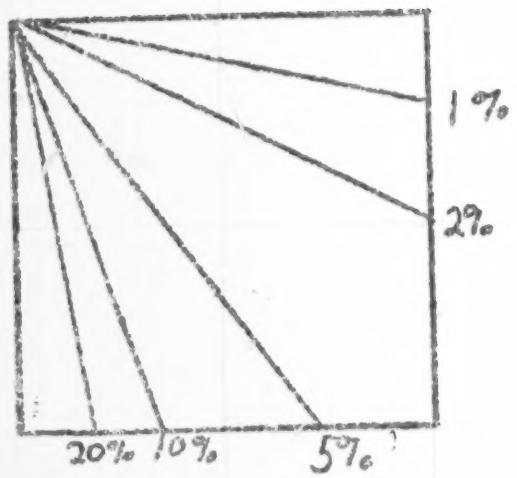


Psych. 1

1 cr credit

Graph 1

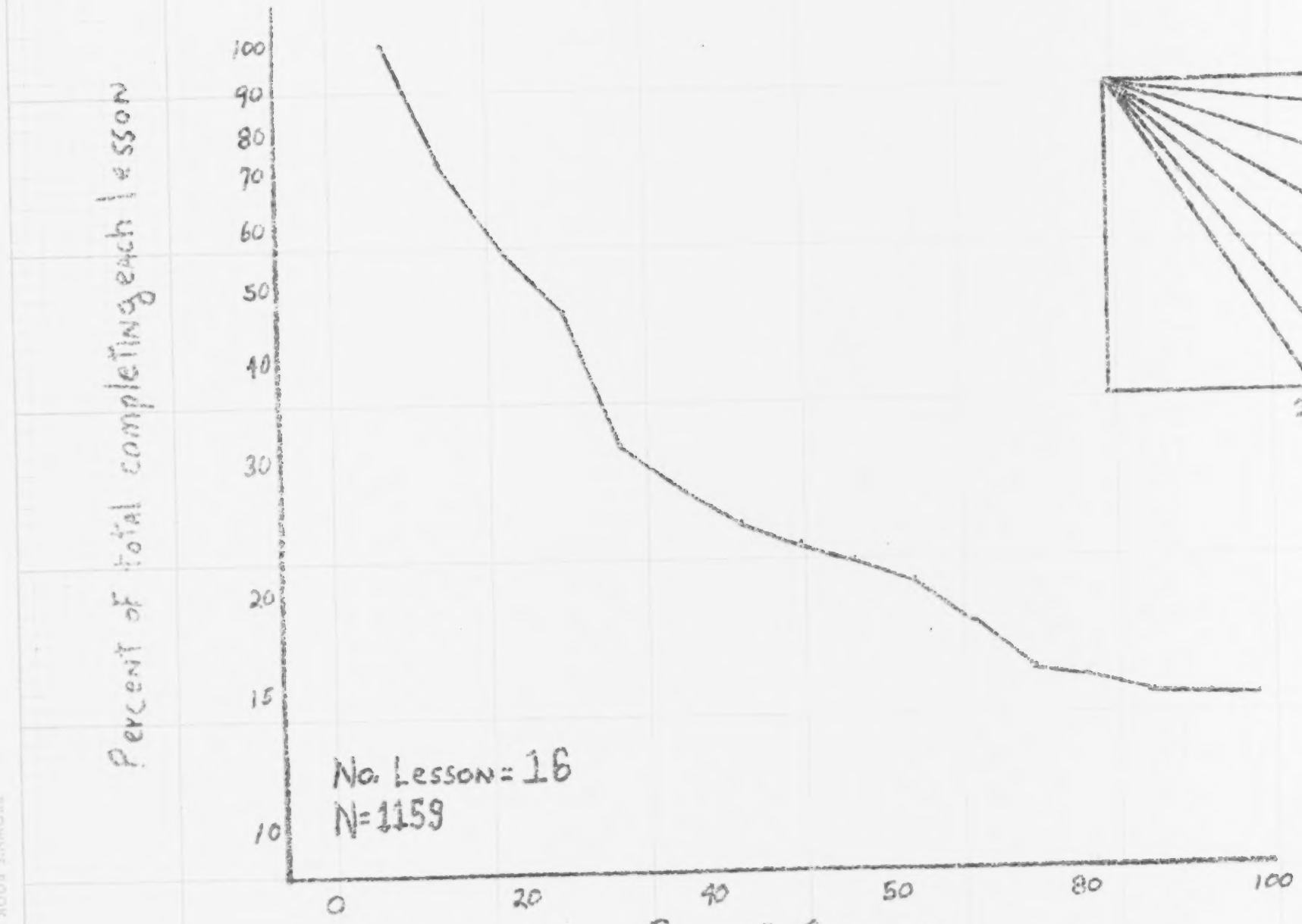


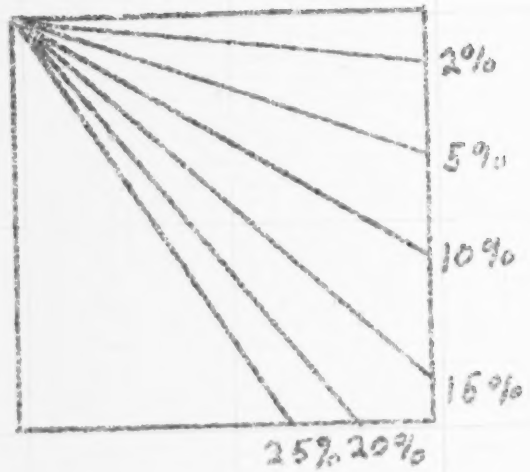


Psych 1D

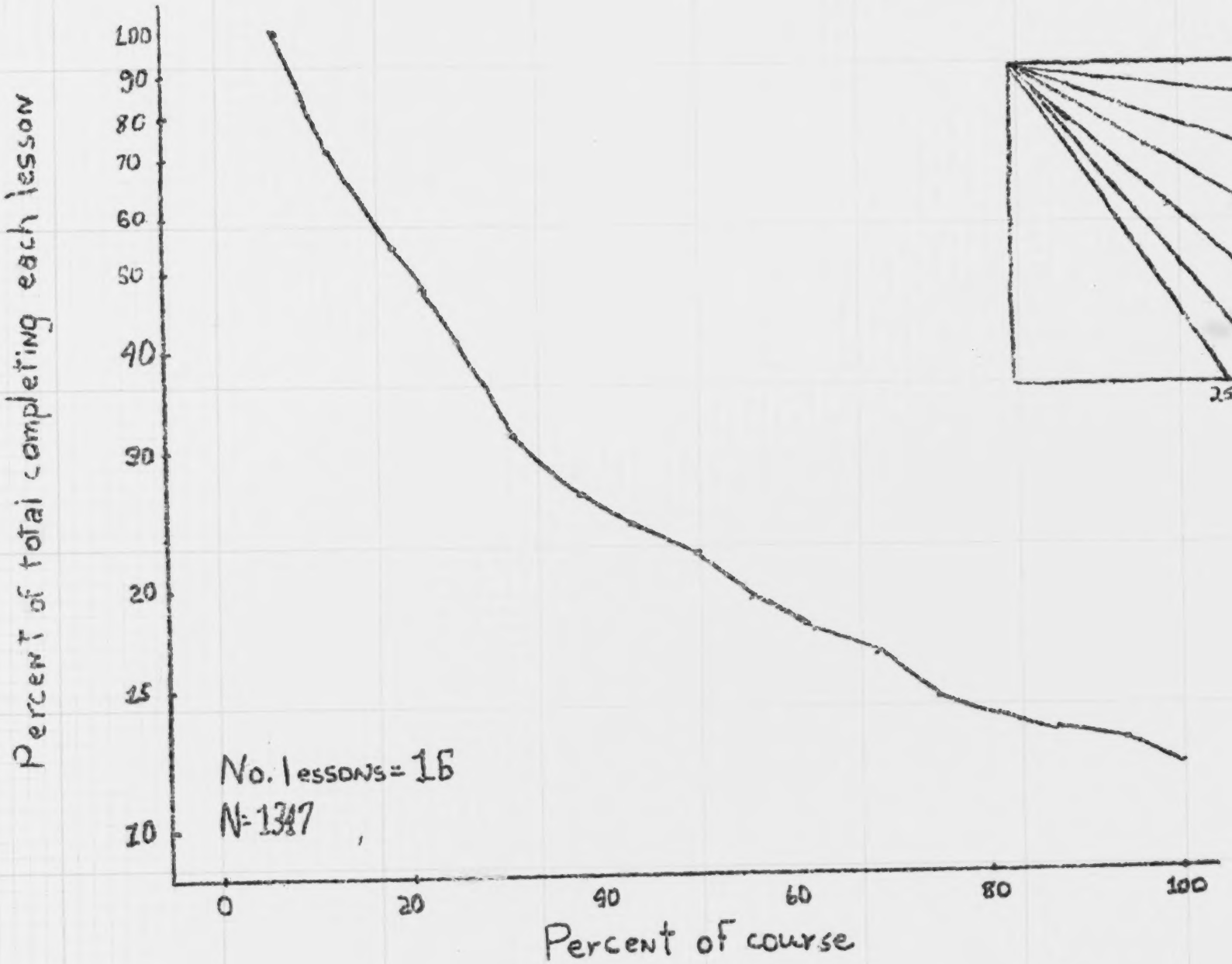
High School

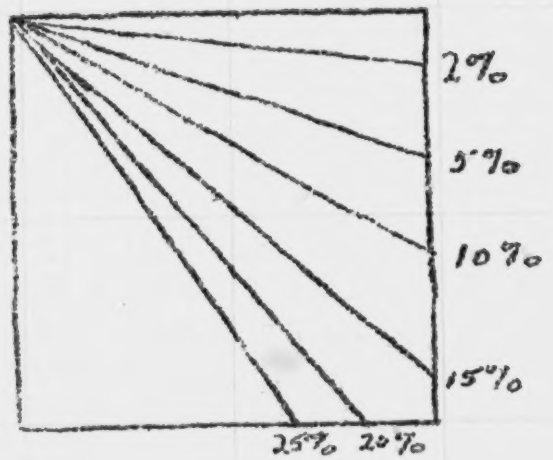
Graph 2





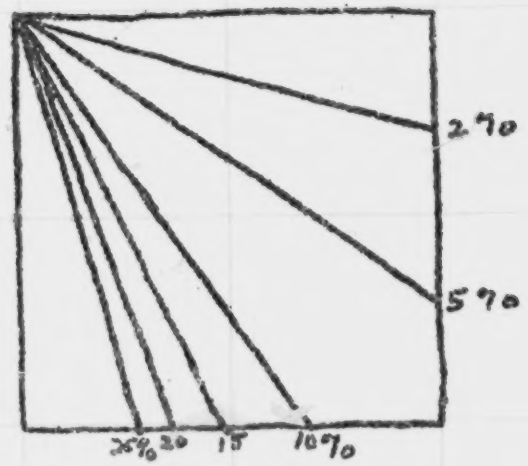
USAFI General course-1956-57

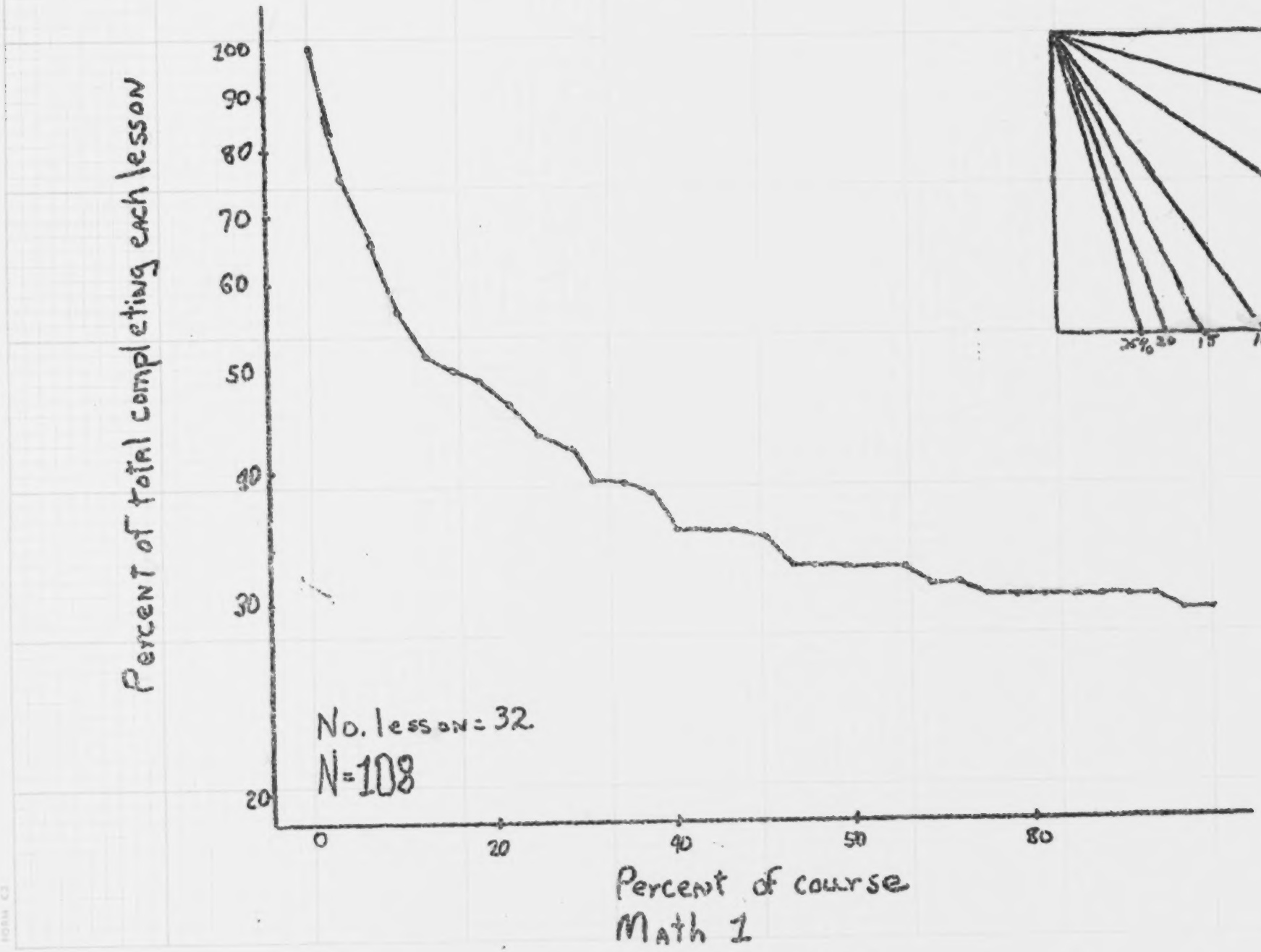




USAFI General Course-1957-58

Graph 4





Math 1

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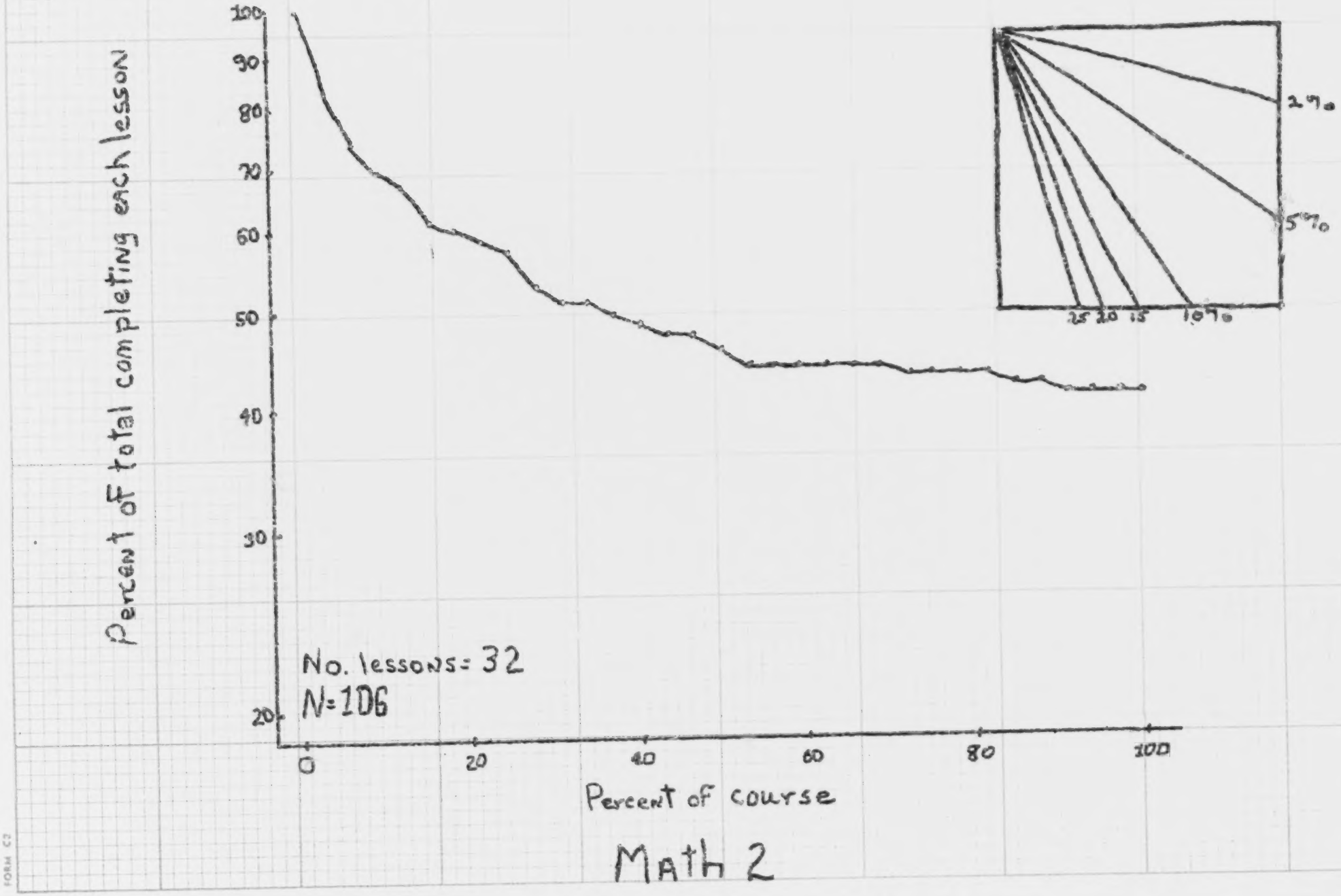
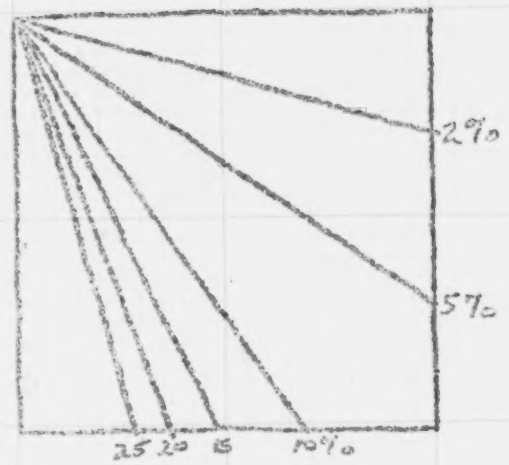
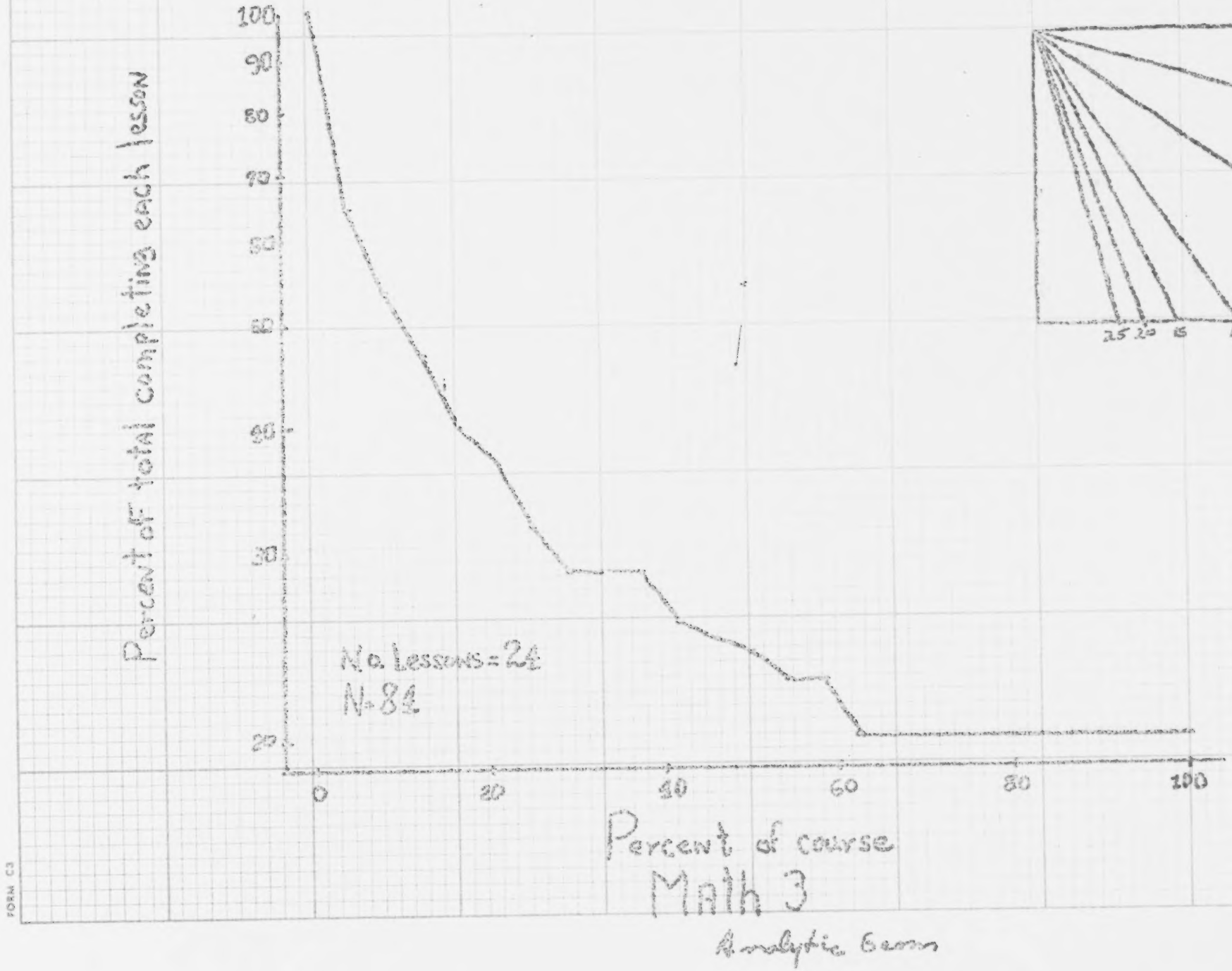


Math 2

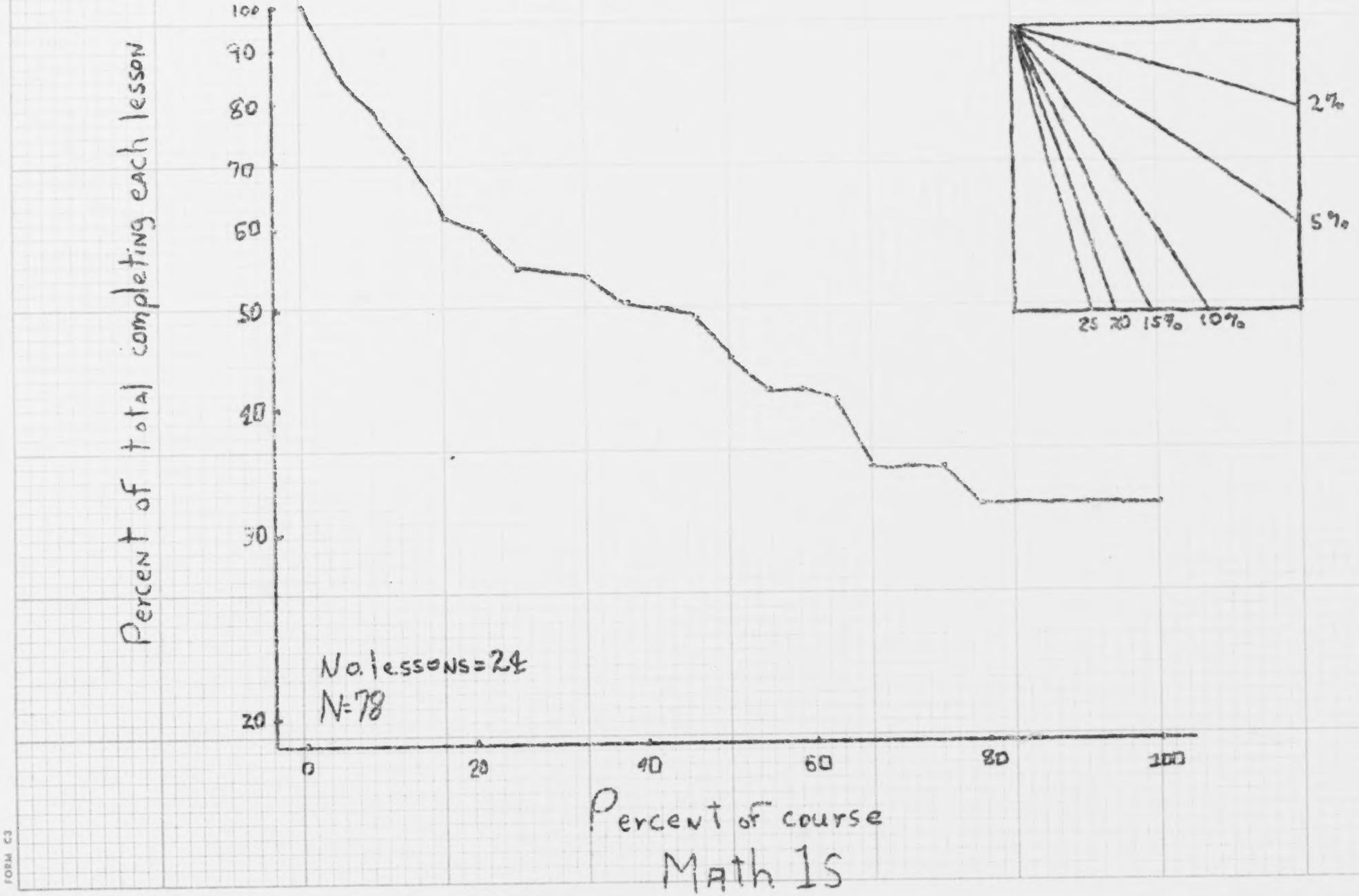
UW Credit





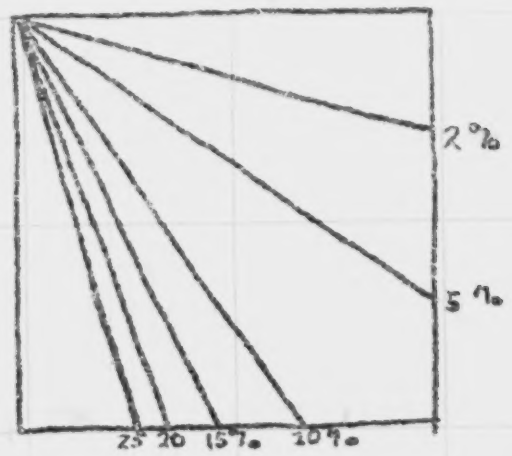
FORM C3

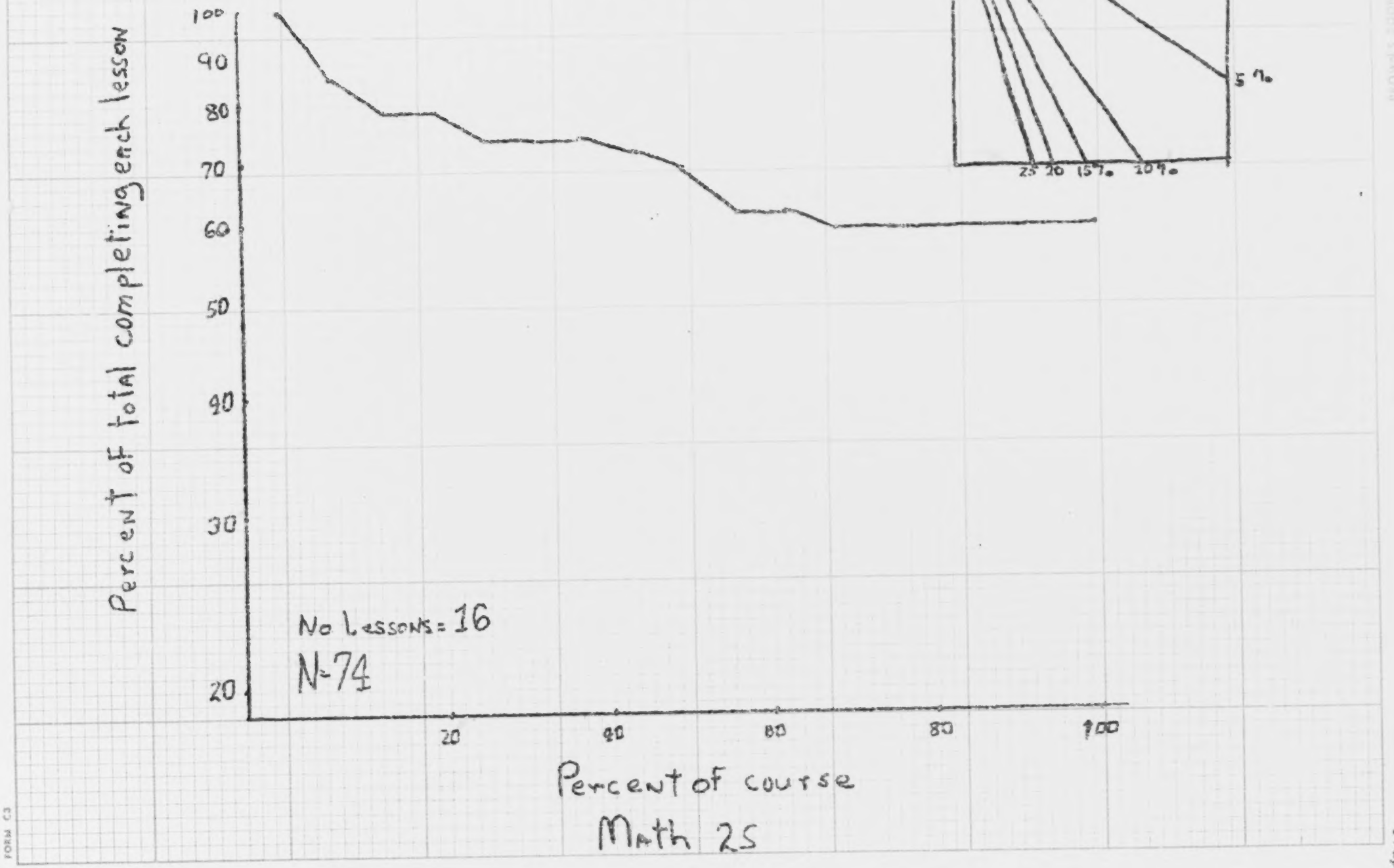
GRAPH 7



Math 15

U.W. Credit College Algebra

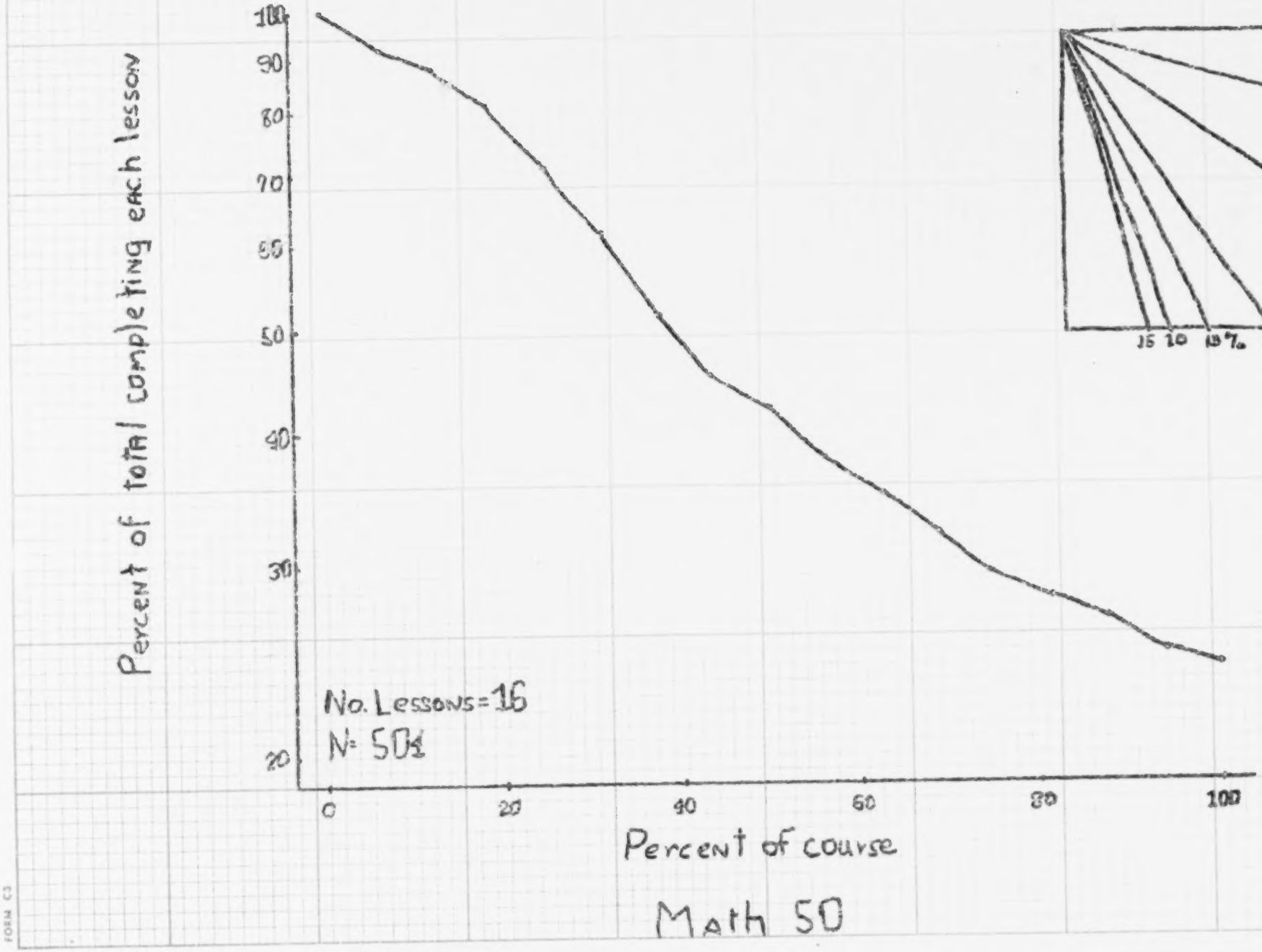


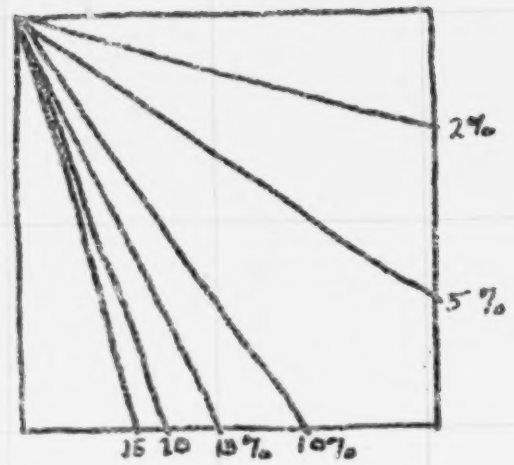


U. W. Credit Plane Trig

Graph 9

FORM C3





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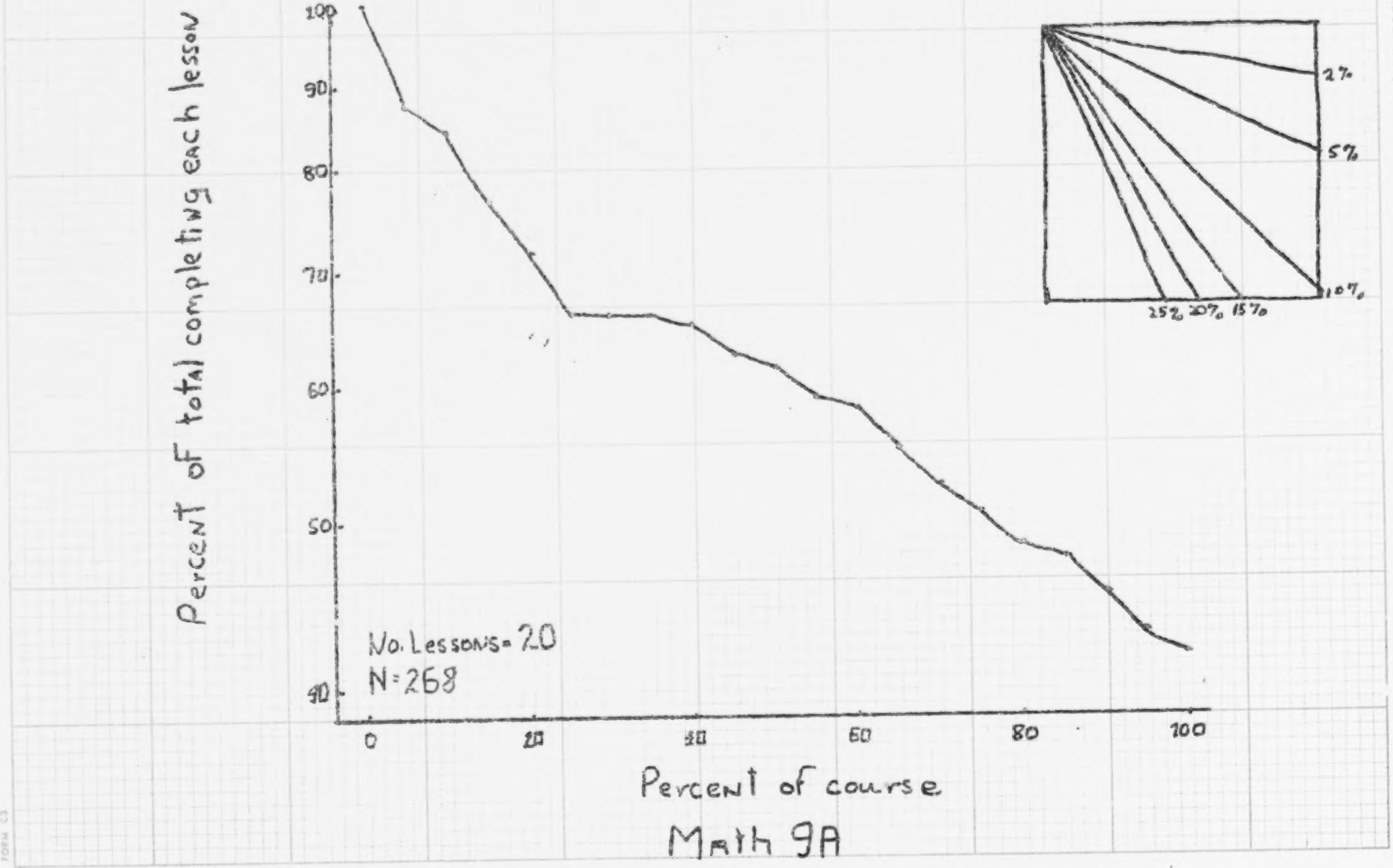
Graph 20



Math 9A

H. S. Elem. Algebra 1st Sem

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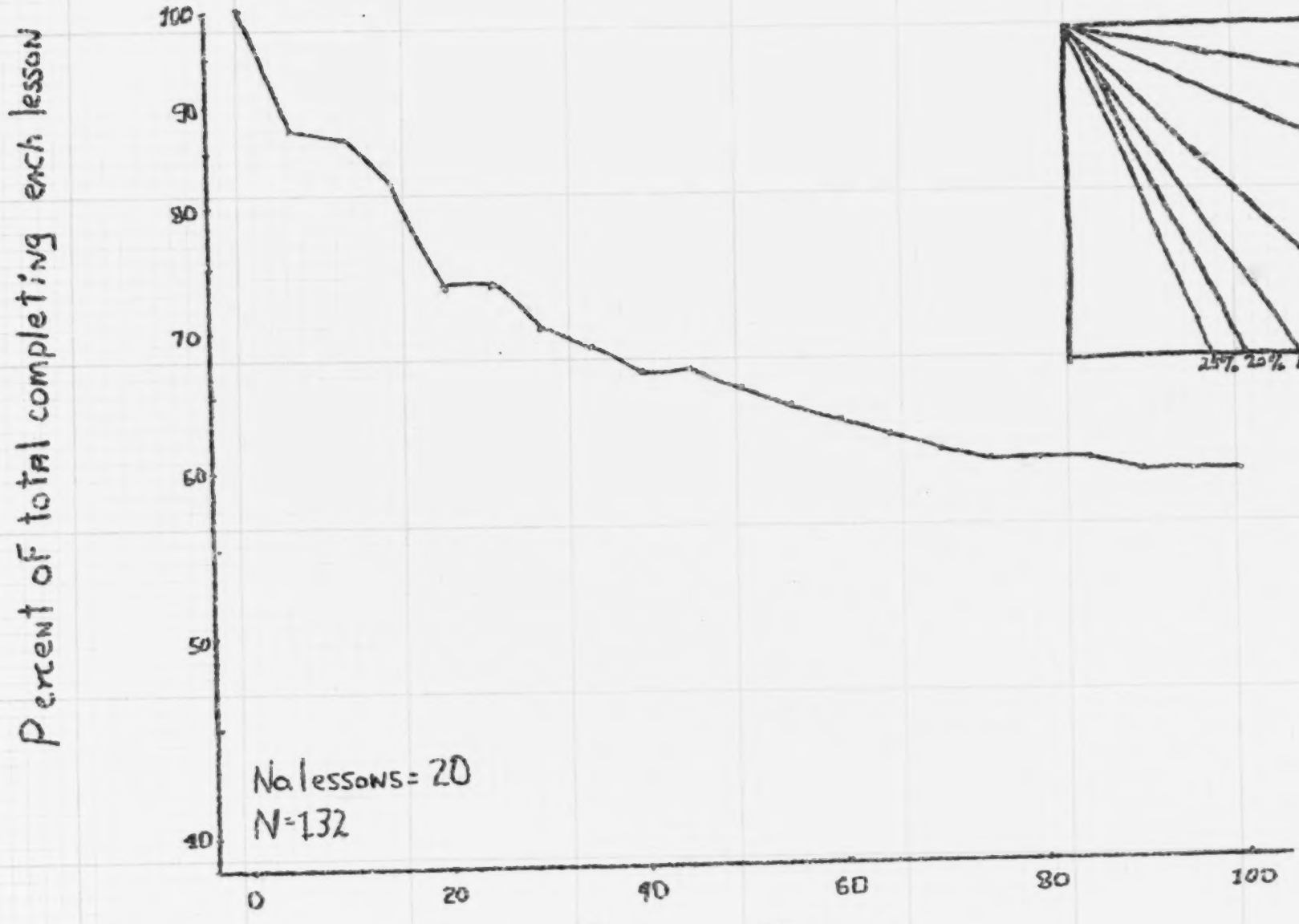
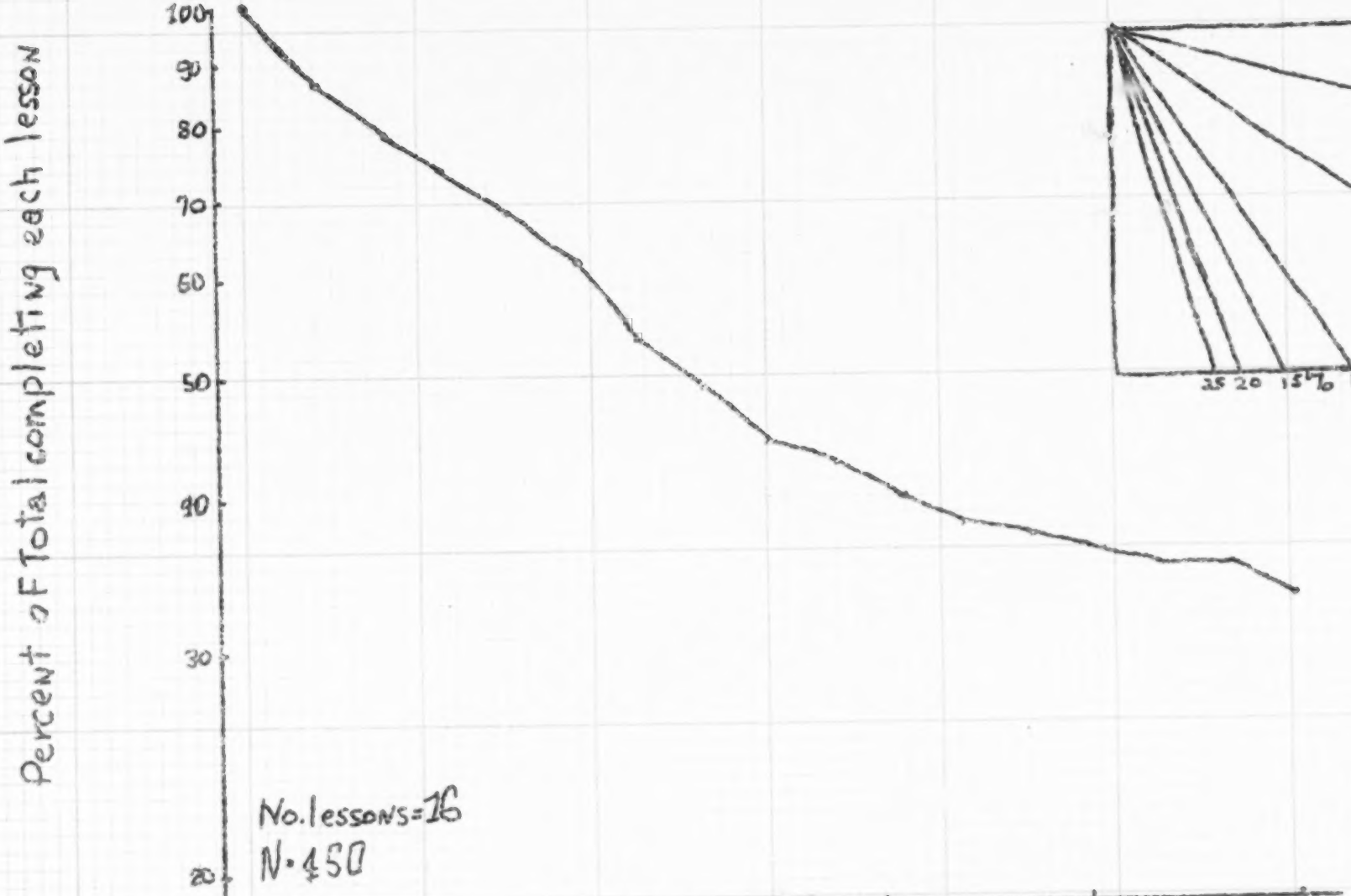
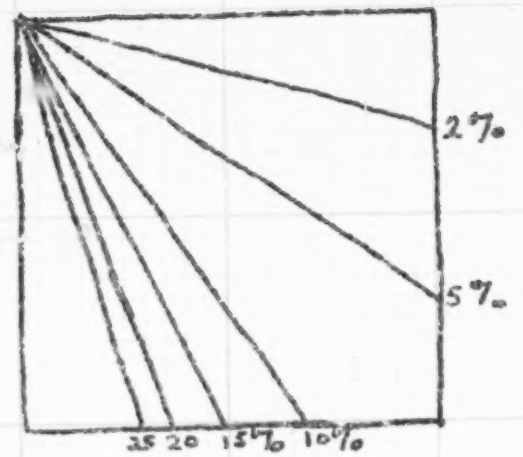


Math 9B

H.S. Elem Algebra 2nd Sem.

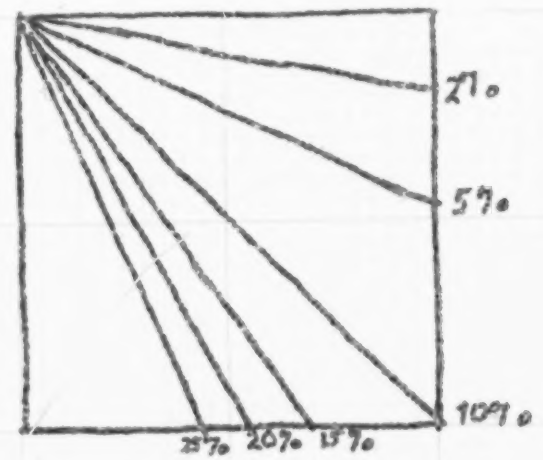
Graph 12

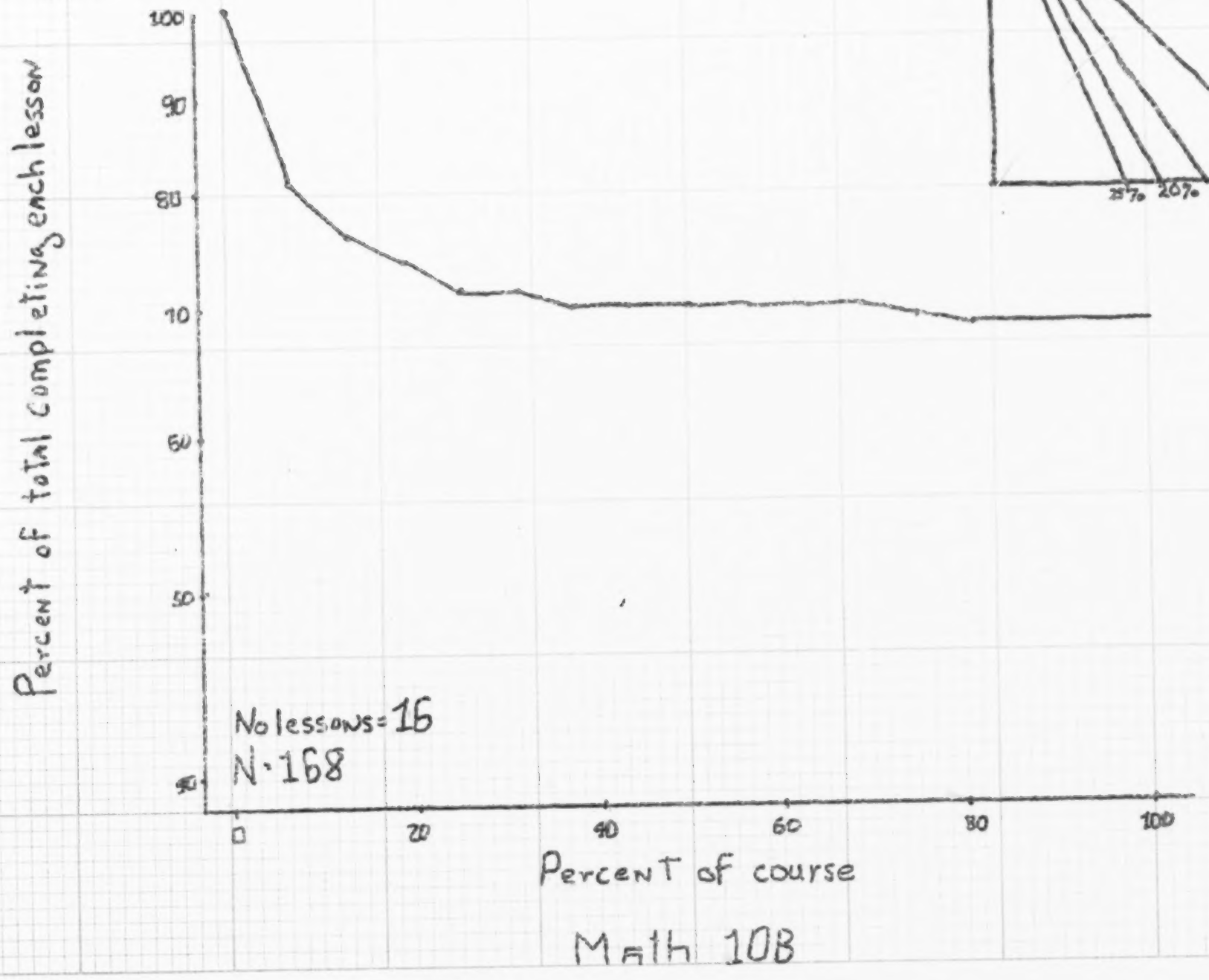




Math 10A

H. S. Plane Geometry 1st Sem.



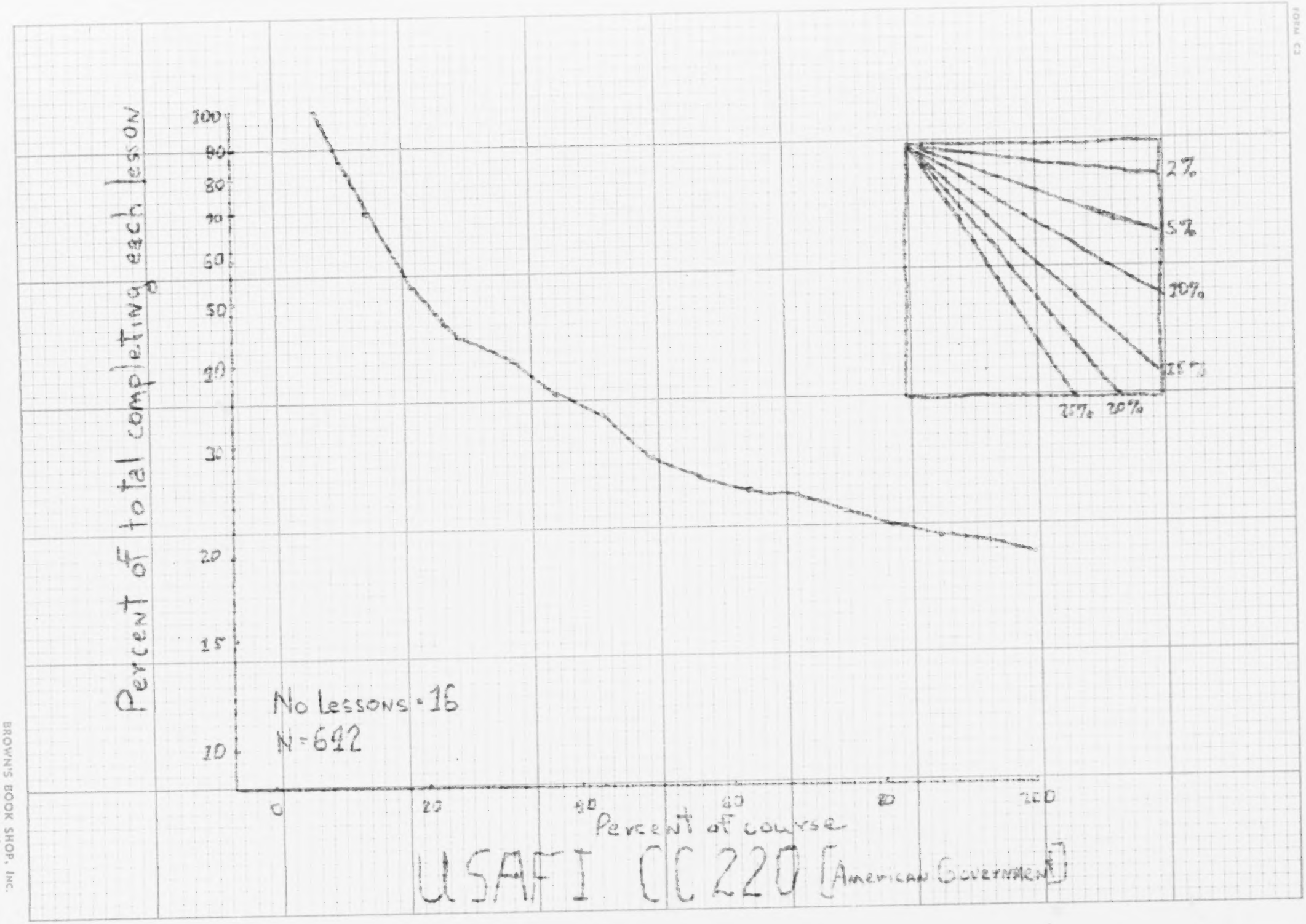


Math 10B

H.S. Plane Geom. 2nd Sem.

FORM C3

Graph 14



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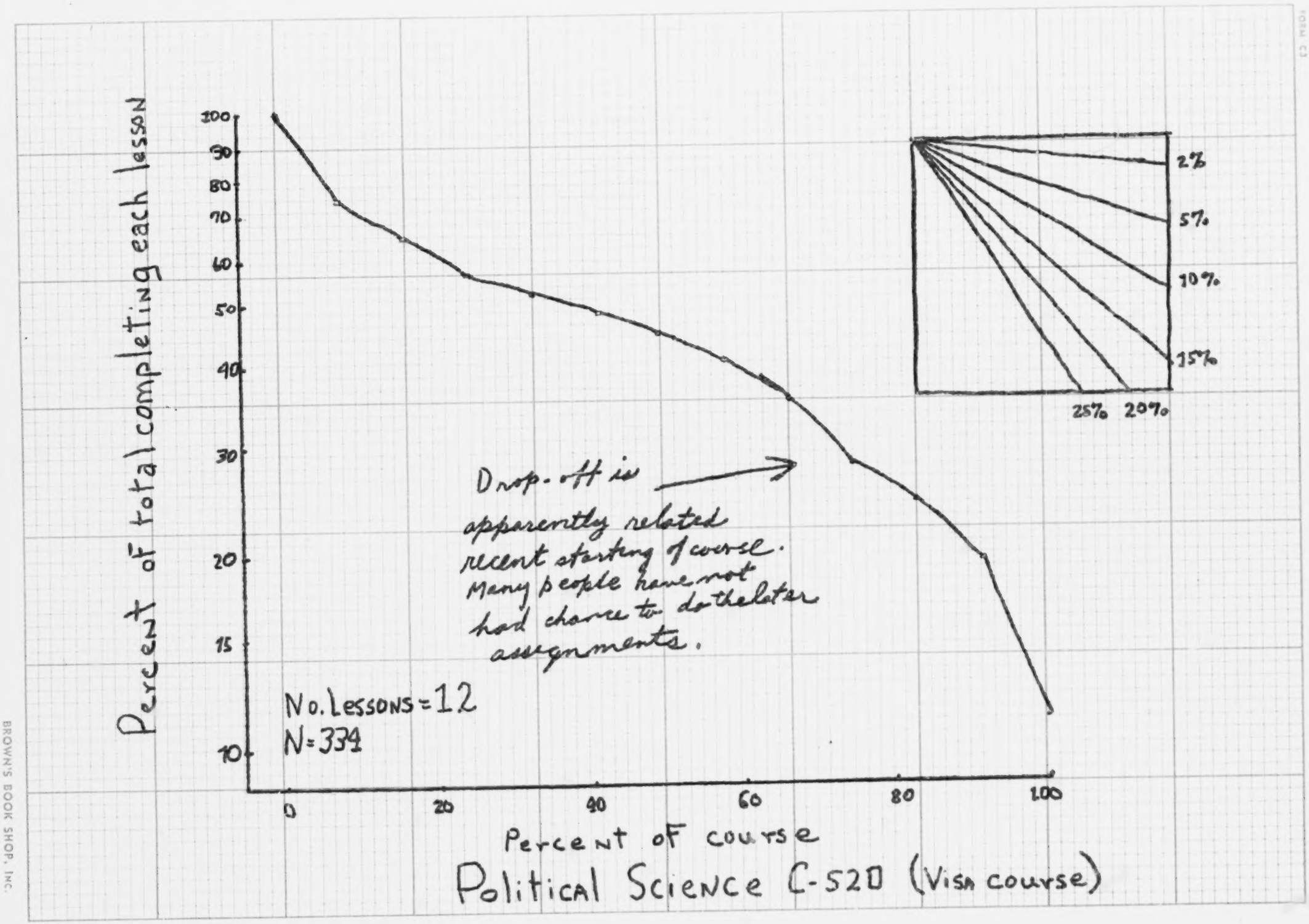

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Graph 76